

CHOITHRAM SCHOOL MANIKBAGH INDORE**CLASS XII- Session: 2017-18****Subject: Physics****Allotment Date: 01/12/17****Assignment No: IV****Submission Date: 06/12/17**

S.No.	Question	Level	Mark
OBJECTIVE			
Q.1	When an unpolarized light of intensity I_0 is incident on a polarizing sheet .Find the intensity of the light which does not get transmitted ?	Knowledge	1
Q.2	A plane mirror is approaching you at a speed of 10 cm/sec. You can see your image in it. At what speed will your image approach you ?	Understanding	1
Q.3	In Young's double slit experiment using sodium light ($\lambda = 5898\text{\AA}$), 92 fringes are seen. If given colour ($\lambda = 5461\text{\AA}$) is used, how many fringes will be seen ?	Hot	1
SHORT ANSWER TYPE - I			
Q.4	Two metals X and Y when illuminated with appropriate radiations emit photoelectron. The work function of X is higher than that of Y. Which metal has higher value of threshold wavelength and why?	Knowledge	2
Q.5	If two waves represented by $y_1 = 4 \sin \omega t$ and $y_2 = 3 \sin \left(\omega t + \frac{\pi}{3} \right)$ interfere at a point, find the amplitude of the resulting wave .	Understanding	2
Q.6	Two identical sources emitted waves which produces intensity of k unit at a point on screen where path difference is λ . What will be intensity at a point on screen at which path difference is $\lambda/4$?	Logical	2
Q.7	The apparent wavelength of the light from a star moving away from the earth is 0.01% more than its real wavelength. Find the velocity of star ?	Hot	2
SHORT ANSWER TYPE - II			
Q.8	Ultraviolet radiations of different frequencies ν_1 and ν_2 are incident on two photosensitive materials having work function W_1 and W_2 ($W_1 > W_2$) respectively. The kinetic energy of the emitted photoelectron is same in both the cases Which one of the two radiation will be of higher frequency and why ?	Understanding	3
Q.9	When Pooja a student of 12 th class ,watched her mother washing clothes in open ,she observed coloured soap bubbles and was curious to know why the open soap bubble appears coloured.In the evening when her father ,an engineer by profession ,came home, she asked him this question. Her father explained to her the basic phenomenon of physics due to which the soap bubbles appear coloured. (i)What according to you the values displayed by pooja and her father ? (ii)State the phenomenon of light involved in the formation of coloured soap bubbles.	Value based	3
Q.10	(i)For the same angle of incidence, the angle of refraction in media P,Q and R are $35^\circ, 25^\circ, 15^\circ$ respectively .In which medium will the velocity of light be minimum ?	MultiConceptual	3

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	(ii)An astronomical telescope is to be designed to have a magnifying power of 50 in normal adjustment .If the length of tube is 102cm. Find the powers of the objective and eye piece.		
	LONG ANSWER TYPE		
Q.11	With the help of a ray diagram ,show the formation of image of a point object by refraction of light at a spherical surface separating two media of refractive indices n_1 and n_2 ($n_1 > n_2$) respectively. Using this diagram, derive the relation $\frac{n_1}{v} - \frac{n_2}{u} = \frac{n_2 - n_1}{R}$ Write the sign conventions used.What happens to the focal length of convex lens when it is immersed in water .	Logical	5
Q.12	Draw a ray diagram to show the image formation in a refracting type astronomical telescope and compound microscope in near point adjustment. Write down the mathematical expression for their magnifying power.	Hot	5